

**Fig. 1.** Synthetic gene for *P. falciparum* FVO strain AMA-1, employing *P. pastoris* codon preference

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      10      20      30      40      50
ATGAGGAAGTTGTACTGCGTTTTGTTGTTGTCTGCTTTCGAGTTCACCTA
M R K L Y C V L L L S A F E F T Y>

      60      70      80      90     100
CATGATCAACTTCGGTCGTGGTCAGAACTACTGGGAGCATCCTTACCAGA
M I N F G R G Q N Y W E H P Y Q>

     110     120     130     140     150
AGTCTGACGTCTACCATCCTATCAACGAACATAGGGAGCATCCTAAGGAA
K S D V Y H P I N E H R E H P K E>

     160     170     180     190     200
TACGAATACCCACTGCATCAAGAGCACACTTACCAGCAGGAAGATTCTGG
Y E Y P L H Q E H T Y Q Q E D S G>

     210     220     230     240     250
TGAAGATGAAACACCTTGCAACACGCTTACCCCATCGATCATGAAGGAG
E D E N T L Q H A Y P I D H E G>

     260     270     280     290     300
CTGAACCAGCCCTCAGGAACAAAACCTGTTCTCTTCCATCGAAATCGTG
A E P A P Q E Q N L F S S I E I V>

     310     320     330     340     350
GAAAGATCCAACACTACATGGGTAACCCATGGACTGAGTACATGGCAAAGTA
E R S N Y M G N P W T E Y M A K Y>

     360     370     380     390     400
CGACATCGAGGAAGTGCACGGAAGTGGTATCAGGGTTGATCTGGGTGAAG
D I E E V H G S G I R V D L G E>

     410     420     430     440     450
ATGCCGAAGTCGCTGGTACTCAGTACAGACTCCCTTCTGGTAAGTGCCCT
D A E V A G T Q Y R L P S G K C P>

     460     470     480     490     500
GTTTTCGGAAAGGGTATCATCATCGAAAACCTAAGACTACTTTCCTCAA
V F G K G I I I E N S K T T F L K>

     510     520     530     540     550
GCCTGTTGCTACTGGTAACCAAGATCTTAAGGACGGAGGTTTCGCTTTCC
P V A T G N Q D L K D G G F A F>

     560     570     580     590     600
CACCTACTAACCCCTCTGATCTCTCCAATGACTTTGAACGGTATGCGTGAC
P P T N P L I S P M T L N G M R D>

     610     620     630     640     650
TTCTACAAGAACAACGAATACGTCAAGAACTTGGATGAATTGACTTTGTG
F Y K N N E Y V K N L D E L T L C>

     660     670     680     690     700
TAGTAGACACGCTGGAACATGAACCCTGATAACGACAAGAACAGTAAC
S R H A G N M N P D N D K N S N>

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710 720 730 740 750  
ACAAGTACCCCGCGGTTTACGACTACAACGATAAGAAGTGTACATCCTG  
Y K Y P A V Y D Y N D K K C H I L>

760 770 780 790 800  
TACATCGCTGCCCAAGAAAACAACGGACCAAGATACTGTAACAAGGATCA  
Y I A A Q E N N G P R Y C N K D Q>

810 820 830 840 850  
AAGTAAGAGAACTCTATGTTCTGTTTCAGACCTGCAAAGGACAAGCTGT  
S K R N S M F C F R P A K D K L>

860 870 880 890 900  
TCGAAAACACTACGTGTACTTGTCCAAGAACGTTGTCGATAACTGGGAAGAA  
F E N Y V Y L S K N V V D N W E E>

910 920 930 940 950  
GTCTGCCCAAGAAAGAACCTCGAGAACGCAAAGTTCCGGTCTGTGGGTCTGA  
V C P R K N L E N A K F G L W V D>

960 970 980 990 1000  
TGGTAACTGTGAAGACATCCCTCATGTGAACGAGTTCAAGTCTAAGGATT  
G N C E D I P H V N E F S A N D>

1010 1020 1030 1040 1050  
TGTTGAGTGTAAACAAGCTGGTCTTCGAGTTGTCTGCCAGTGACCAACCT  
L F E C N K L V F E L S A S D Q P>

1060 1070 1080 1090 1100  
AAGCAGTACGAACAGCATTTGACTGACTACGAAAAGATCAAGGAAGGATT  
K Q Y E Q H L T D Y E K I K E G F>

1110 1120 1130 1140 1150  
CAAGAACAAGAACGCCGATATGATCAAGTCCGCTTTCTCCCAACCGGTG  
K N K N A D M I K S A F L P T G>

1160 1170 1180 1190 1200  
CATTCAAAGCAGATAGATACAAGTCTCACGGTAAGGGTTACAAGTGGGGA  
A F K A D R Y K S H G K G Y N W G>

1210 1220 1230 1240 1250  
AACTACAACAGAGAAACCCAAAAGTGTGAAATCTTCAACGTCAAGCCTAC  
N Y N R E T Q K C E I F N V K P T>

1260 1270 1280 1290 1300  
CTGCCTCATCAACGACAAGTCCTACATTGCGACTACTGCCCTGTCTCATC  
C L I N D K S Y I A T T A L S H>

1310 1320 1330 1340 1350  
CAATCGAAGTCGAACACAACCTTCCCTGCGAGTCTCTACAAGGACGAGATC  
P I E V E H N F P C S L Y K D E I>

1360 1370 1380 1390 1400  
AAGAAGGAAATCGAGCGTGAAAGTAAGCGTATCAAGTTGAACGATAACGA  
K K E I E R E S K R I K L N D N D>

1410 1420 1430 1440 1450

CGACGAAGGTAACAAGAAGATCATCGCACCTAGGATCTTCATCTCCGATG  
D E G N K K I I A P R I F I S D>

1460 1470 1480 1490 1500  
ACAAGGATTCCCTCAAGTGTCTTGTGACCCTGAGATGGTGAGTCAGTCC  
D K D S L K C P C D P E M V S Q S>

1510 1520 1530 1540 1550  
ACTTGTAGATTCTTCGTTTGCAAGTGCGTCGAACGTAGAGCCGAAGTCAC  
T C R F F V C K C V E R R A E V T>

1560 1570 1580 1590 1600  
TAGTAACAACGAAGTTGTCTGGAAGGAAGAATACAAGGATGAATACGCTG  
S N N E V V V K E E Y K D E Y A>

1610 1620 1630 1640 1650  
ATATTCCAGAGCATAAGCCTACGTACGATAACATGAAGATCATCATCGCT  
D I P E H K P T Y D N M K I I I A>

1660 1670 1680 1690 1700  
AGTTCTGCTGCTGTCTGCTGTTCTGGCTACTATCCTCATGGTGTACCTTTA  
S S A A V A V L A T I L M V Y L Y>

1710 1720 1730 1740 1750  
CAAGAGAAAGGGAAACGCTGAGAAGTACGACAAGATGGATCAACCTCAAC  
K R K G N A E K Y D K M D Q P Q>

1760 1770 1780 1790 1800  
ATTACGTAAGAGTACTTCCAGGAACGATGAGATGTTGGATCCAGAGGCC  
H Y G K S T S R N D E M L D P E A>

1810 1820 1830 1840 1850  
TCCTTCTGGGGTGAGGAGAAGAGAGCCTCTCATACTACTCCAGTTTTGAT  
S F W G E E K R A S H T T P V L M>

1860  
GGAGAAGCCTTACTACTAA  
E K P Y Y \*>